

Claim Amendments

Pursuant to revised 37 CFR 1.121, a complete listing of all claims in the application follows along with a parenthetical expression of the status of each claim. No new matter has been added.

1. (Canceled)
2. (Currently amended) The apparatus of claim ~~4~~23, wherein said removable bundle further comprises a plurality of cooling tubes~~means~~.
3. (Currently amended) The apparatus of claim 2, wherein a quantity of said plurality of cooling tubes~~means~~ is ~~dependent~~ selected based on an inside diameter of the reactor, an outside diameter of the cooling tubes~~means~~, and a requisite number of cooling tubes~~means~~.
4. (Currently amended) The apparatus of claim 2, wherein said plurality of cooling tubes~~means~~ is preferably twelve.
5. (Currently amended) The apparatus of claim 2, wherein said plurality of cooling tubes~~means~~ is preferably four.
6. (Currently amended) The apparatus of claim ~~4~~23 further comprising a plurality of removable bundles.
7. (Canceled)
8. (Currently amended) The apparatus of claim ~~7~~24, wherein the cooling tube means further comprises a first plenum ~~means functioning to force boiler feed water~~BFW from the ~~boiler feed water~~BFW manifold to a center tube ~~means of said cooling tube means, said center tube means functioning to generate~~ thereby generating saturated steam in an annulus ~~means of said cooling tube means, said annulus means functioning to carrying~~ saturated steam and excess BFW to a second plenum ~~means functioning to force~~forcing said saturated steam and excess BFW through to a steam manifold, whereby the saturated steam and excess BFW ~~is~~ are carried from the reactor in a steam conduit.
9. (Currently amended) The apparatus of claim ~~7~~24 further comprising a rigging means mounted to said inside surface, ~~said rigging means functioning to provide an anchor~~ when the removable bundle is moved within the reactor or lifted out of the reactor.

10. (Currently amended) The apparatus of claim ~~7~~24 further comprising a traversing means ~~functioning~~ to enable a movement of said removable bundle along each of said plurality of support rails ~~means~~, thereby facilitating the moving or removal of said removable bundle.

11. (Currently amended) The apparatus of claim ~~7~~24, wherein said removable bundle further comprises twelve cooling tubes ~~means~~.

12. (Currently amended) The apparatus of claim ~~7~~24, wherein said removable bundle further comprises four cooling tubes ~~means~~.

13. (Currently amended) A cooling tube arrangement ~~to facilitate a removal of a bundle of cooling tubes from a reactor, said reactor having a reactor head and a conduit to convey boiler feed water to a boiler feed water (BFW) manifold, said cooling tube arrangement~~ comprising:

a plurality of cooling tubes mounted to a first and second plenum, thereby forming a cooling tube bundle;

each of said plurality of cooling tubes having a center tube to receive boiler feed water (BFW) passing through said first plenum from ~~said boiler feed water~~ a BFW manifold;

each of said plurality of cooling tubes having an annulus wherein ~~said~~ saturated steam and excess BFW ~~passes~~ pass through to said second plenum to a steam manifold, whereby the saturated steam and excess BFW ~~is~~ are carried from the reactor in a steam conduit;

wherein said cooling tube bundle is ~~mounted~~ mountable on one of a plurality of support rails at a lower cross-section of ~~the~~ a reactor head to enable a horizontal movement of the cooling tube bundle; and

wherein said cooling tube bundle is removable from the reactor by means of one of a plurality of bundle removal nozzles positioned at a top section of the reactor.

14. (Canceled)

15. (Original) A process for arranging cooling tubes in a reactor to facilitate a removal of the cooling tubes from the reactor, said process comprising:

mounting a plurality of cooling tubes to a first and second plenum, thereby forming a cooling tube bundle; and

mounting said cooling tube bundle on one of a plurality of support rails to enable a horizontal movement of the cooling tube bundle within the reactor, said cooling tube bundle being positionable below one of a plurality of bundle removal nozzles penetrating a head section of said reactor, each of said plurality of support rails located at a lower cross section of the reactor head.

16. (Previously presented) A process of replacing cooling tubes from a reactor, said reactor having an inside surface, a reactor head, and a conduit to convey boiler feed water (BFW) to a plurality of boiler feed water runners and saturated steam and excess BFW from a plurality of steam runners, each of said plurality of boiler feed water runners and steam runners connected to a cooling tube bundle, said process comprising:

selecting a cooling tube bundle to be removed, wherein said cooling tube bundle comprises a plurality of cooling tubes mounted to a first and second plenum, said cooling tube bundle being supported on one of a plurality of support rails at a lower cross section of the reactor head;

removing an associated boiler feed water runner and an associated steam runner from said cooling tube bundle to enable access to said cooling tube bundle;

anchoring the cooling tube bundle to the inside surface of the reactor to provide cooling tube bundle stability when the cooling tube bundle is moved;

maneuvering said cooling tube bundle in a horizontal direction along said support rail within said reactor to position said cooling tube bundle below one of a plurality of bundle removal nozzles penetrating the reactor head; and

lifting said cooling tube bundle out of the reactor by passing said cooling tube bundle through an overlying bundle removal nozzle.

17. (Currently amended) The process of claim 16, further comprising the step of lifting the cooling tube bundle to enable a placement of a moving device ~~means~~ underneath the cooling tube bundle on said support rail.

18. (Currently amended) The process of claim 16, further comprising the step of installing a replacement cooling tube bundle.

19. (Previously presented) A process of replacing cooling tubes from a reactor, said reactor having an inside surface, a reactor head, and a conduit to convey boiler feed water to a

plurality of boiler feed water (BFW) runners and saturated steam and excess BFW from a plurality of steam runners, each of said plurality of boiler feed water runners and steam runners connected to a cooling tube bundle, said process comprising:

selecting a cooling tube bundle to be removed, wherein said cooling tube bundle comprises a plurality of cooling tubes mounted to a first and second plenum, said cooling tube bundle being supported on one of a plurality of support rails at a lower cross section of the reactor head;

designating said cooling tube bundle to be damaged or undamaged;

removing an associated boiler feed water runner and an associated steam runner from said cooling tube bundle to enable access to said cooling tube bundle;

anchoring the cooling tube bundle to the inside surface of the reactor to provide stability when the cooling tube bundle is moved;

maneuvering said cooling tube bundle in a horizontal direction along said support rail within said reactor to position said cooling tube bundle below one of a plurality of bundle removal nozzles penetrating the reactor head;

lifting said cooling tube bundle out of the reactor by passing said cooling tube bundle through an overlying bundle removal nozzle; and

installing a replacement cooling tube bundle if said cooling tube bundle was designated as damaged.

20. (Currently amended) The process of claim 19; further comprising the step of removing from the reactor at least one cooling tube bundle designated as undamaged to enable a removal of a damaged cooling tube bundle.

21. (Currently amended) The process of claim 20; further comprising the step of reinstalling in the reactor the at least one cooling tube bundle designated as undamaged.

22. (Currently amended) The process of claim 19; further comprising the step of lifting the cooling tube bundle to enable a placement of a moving device means underneath the cooling tube bundle on said support rail.

23. (New) A cooling tube arrangement for use in combination with a Fischer-Tropsch reactor, said cooling tube arrangement comprising:

at least one cooling tube mounted to a first and second plenum, thereby forming a bundle;

said at least one cooling tube having a center to receive boiler feed water (BFW) passing through said first plenum from a BFW manifold;

said at least one cooling tube having an annulus to carry saturated steam and excess BFW passing to said second plenum;

said saturated steam passing to a steam manifold and a steam conduit for delivery from the reactor; and

wherein said bundle is mountable on a support rail in a reactor head to enable a horizontal movement of the bundle thereby facilitating removal of the bundle from a top section of the reactor.

24. (New) A Fischer-Tropsch reactor having an inside surface, a reactor head, and a conduit to convey boiler feed water (BFW) to a BFW manifold, said reactor comprising:

at least one cooling means to absorb an exothermic heat of reaction within the reactor, said at least one cooling means being configured for removal from the reactor as a removable bundle;

said removable bundle comprising a plurality of cooling tubes;

wherein said removable bundle is mountable on one of a plurality of support rails at a lower cross-section of the reactor head, thereby enabling a horizontal movement of the removable bundle; and

a plurality of bundle removal nozzles positioned at said reactor head, each of said bundle removal nozzle means providing an egress route therethrough for the removable bundle.

25. (New) A cooling tube arrangement for use in combination with a Fischer-Tropsch reactor, said reactor having an inside surface, a reactor head, and a conduit to convey boiler feed water (BFW) to a BFW manifold, said cooling tube arrangement comprising:

a plurality of cooling tubes forming a cooling means to absorb an exothermic heat of reaction within the reactor;

said cooling means having a first plenum to force BFW from the BFW manifold to a center of each of said cooling means, each of said centers thereby generating saturated steam in an annulus of each of said cooling means;

said cooling means having a second plenum to force said saturated steam through to a steam manifold, whereby the saturated steam and excess BFW are carried from the reactor in a steam conduit; and

wherein said cooling means is mountable on one of a plurality of support rails in a reactor head to enable a horizontal movement of the cooling means and to facilitate removal of the cooling means from one of a plurality of egress nozzles from the reactor head.